

Open Questions on ET Tunnel Design Requirements

Brainstorming 7th of May 2019

Open questions:

1. How much space do we need around the tubes
 - a. For installation?
 - b. For maintenance/repairing?
 - c. For baking?
 - d. What is needed to go from a given beam size to the outer diameter of the tube (sizes of baffles, thickness of the tube wall (corrugated?), stiffening, is there any trade-off to be analysed between tube diameter and its vacuum-Leitwert, i.e. trading metal and spacel vs number of pumps?)

2. How much space is needed for transportation
 - a. Of people
 - b. Of tube sections (depends on installation method)
 - c. Of equipment during installation/maintenance/operation
 - d. Is there a difference between the 10km sections and the 300 meter sections between the corner cavern and the ITM/ETM caverns?

3. What is needed for ventilation of the tunnels
 - a. If in continuous operation
 - b. If in temporary usage (long times without ventilation possible if tunnels are sealed w.r.t. caverns)
 - c. What does it depend on? Radon outgassing?
 - d. Do we need ventilation fans every now and then or ventilation tubes?
 - e. Does the Radon outgassing depend on tunnel lining?

4. Cable trays
 - a. How many
 - b. What size
 - c. How accessible do they have to be?

5. How to drain water?
 - a. What slope is minimally needed
 - b. What cross section is needed
 - c. How does it depend on drilling/blasting/tunnel reinforcement

6. How many emergency access shafts at which distances?
 - a. Can escape rooms serve the same purpose?

7. How long can tunnel segments (divided by soundproof, fire-safe doors or similar) be?
 - a. For fire safety reasons
 - b. For acoustic reasons

8. Spacing of pumping stations? What size caverns are needed?